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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PERRY, ANTHONY T

ART UNIT PAPER NUMBER

2879

DATE MAILED: 03/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/938,838

Applicant(s)

HA ET AL.

Examiner

Anthony T Perry

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: page 15, line 3, of the specification has incorrect reference numbers representing the first and second keepers. The specification has "121b and 122b" and should be corrected to --121a and 122a--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claim1 is rejected under 35 U.S.C. 102(e) as being anticipated by Heyman et al. (US 6,246,164).

Regarding claim 1, Fig. 3 of the Heyman reference discloses a mask frame assembly for a color cathode ray tube, comprising first and second support members 48 spaced out a predetermined distance. Fig. 3 teaches the use of first and second resilient support members 28 installed between the first and second support members 48 supporting the first and second support members 48 with each of the first and second resilient support members 28 comprising supports 42 fixed to the first and second support members 48 and a connection portion 36 and 40 connecting the supports 42. A mask 24 is installed at the first and second support members 48

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such that tension is applied thereto. The mask 2 has a plurality of electron beam through holes 41. The mask frame assembly further includes a compensating unit 44 connected between the first and second support members 48. The compensating unit 44 is formed of a material having a lower thermal expansion coefficient than that of the first and second resilient support members 36 (col. 3, lines 34-36).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-11, 13-15, 18-21, 23, 25, 27-35, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (JP 2000-003682) in view of Heyman et al. (US 6,246,164).

Regarding claim 1, Fig. 1 of the Yamamoto reference discloses a mask frame assembly for a color cathode ray tube, comprising first and second support members 3a,b spaced out a predetermined distance. Fig. 1 teaches the use of first and second resilient support members 3c,d installed between the first and second support members supporting the first and second support members with each of the first and second resilient support members 3c,d comprising supports fixed to the first and second support members and a connection portion connecting the supports. A mask 2 is installed at the first and second support members 3a,b such that tension is applied thereto. The mask 2 has a plurality of electron beam through holes. The mask frame assembly further includes a compensating unit 18i connected between the first and second support

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members 3a,b. Yamamoto does is silent in regards to what material the compensating unit is formed of.

However, Heyman teaches the compensating unit 44 being formed of a material having a lower thermal expansion coefficient than that of the first and second resilient support members so to relieve stress in the compliant sections and intermediary members while also reducing tension in the mask during high temperature processing (col. 3, line 34 - col. 4, line 1).

Accordingly, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used a compensating unit 44 formed of a material having a lower thermal expansion coefficient than that of the first and second resilient support members so to relieve stress in the compliant sections and intermediary members while also reducing tension in the mask during high temperature processing.

Regarding claim 2, the compensating unit taught by Yamamoto in Fig. 7 has both ends fixed to the supports of the respective first and second resilient support members 3c,d. It is noted that the applicant's specific form of the compensating unit being flat bars does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select any form (flat, L-shaped, rod shaped, etc.) of the compensating unit.

Furthermore, the specification of the present application teaches that the compensating unit is not limited a shape of a flat bar but can be in the form of an L-shape (page 16, lines 7-9).

Regarding claims 4-10, 27-28, 31-32, and 35, Fig. 1 of the Yamamoto reference discloses the first and second support members 3a,b comprising a keeper supporting the mask 2 and a flange extending inward from the edge of the keeper. The compensating unit 18i comprises a pair of bars each having both ends screwed to the respective ones of the keepers of the first and

second support members 3a,b. Yamamoto does not specifically teach the compensating unit being fixed to the flanges of the first and second support members. Nor does it specifically teach the use of brackets for fixing the compensating unit. However, it is noted that the applicant's specific location of the compensating unit being fixed to the flanges (facing or facing away from the supports) of the support members or the compensating unit being fixed to brackets, does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select any method (using screws, brackets, flanges, etc.) for fixing the compensating unit as long as the compensating unit is fixed between the first and second support members.

Regarding claim 11, the Heyman reference teaches that the thermal expansion coefficient of the mask is greater than that of the compensating unit and is equal to or greater than that of the first and second resilient support members (col. 3, line 29 – col. 4, line 4).

The combination in the rejection of claim 1 applies.

Regarding claims 13-14, Fig. 1 of the Yamamoto reference discloses a mask frame assembly for a color cathode ray tube, comprising first and second support members 3a,b spaced out a predetermined distance. Fig. 1 teaches the use of first and second resilient support members 3c,d installed between the first and second support members supporting the first and second support members with each of the first and second resilient support members 3c,d comprising supports fixed to the first and second support members and a connection portion connecting the supports. A mask 2 is installed at the first and second support members 3a,b such that tension is applied thereto. The mask 2 has a plurality of electron beam through holes. The mask frame assembly further includes a compensating unit 18i connected between the first and

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second support members 3a,b. Yamamoto does is silent in regards to what material the compensating unit is formed of.

However, Heyman teaches the compensating unit 44 being formed of a material having a lower thermal expansion coefficient than that of the first and second resilient support members so to relieve stress in the compliant sections and intermediary members while also reducing tension in the mask during high temperature processing (col. 3, line 34 - col. 4, line 1).

Accordingly, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used a compensating unit 44 formed of a material having a lower thermal expansion coefficient than that of the first and second resilient support members so to relieve stress in the compliant sections and intermediary members while also reducing tension in the mask during high temperature processing.

Regarding the limitation of values of a mask assembly that satisfy relation of 0.1 less than or equal to $(A \times H^2 \times \Delta\alpha \times 10^4)/I$ less than 1, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a working range for the claimed device, since optimization of workable ranges is considered within the skill of the art.

Regarding claim 15, the compensating unit taught by Yamamoto in Fig. 7 has both ends fixed to the supports of the respective first and second resilient support members 3c,d. It is noted that the applicant's specific form of the compensating unit being flat bars does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select any form (flat, L-shaped, rod shaped, etc.) of the compensating unit.

Furthermore, the specification of the present application teaches that the compensating unit is not limited a shape of a flat bar but can be in the form of an L-shape (page 16, lines 7-9).

Regarding claims 18-20, 29-30, and 33-34, Fig. 1 of the Yamamoto reference discloses the first and second support members 3a,b comprising a keeper supporting the mask 2 and a flange extending inward from the edge of the keeper. The compensating unit 18i comprises a pair of bars each having both ends screwed to the respective ones of the keepers of the first and second support members 3a,b. Yamamoto does not specifically teach the compensating unit being fixed to the flanges of the first and second support members. Nor does it specifically teach the use of brackets for fixing the compensating unit. However, it is noted that the applicant's specific location of the compensating unit being fixed to the flanges (facing or facing away from the supports) of the support members or the compensating unit being fixed to brackets, does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select any method (using screws, brackets, flanges, etc.) for fixing the compensating unit as long as the compensating unit is fixed between the first and second support members.

Regarding claim 21, the Heyman reference teaches that the thermal expansion coefficient of the mask is greater than that of the compensating unit and is equal to or greater than that of the first and second resilient support members (col. 3, line 29 – col. 4, line 4).

The combination in the rejection of claims 13-14 applies.

Regarding claims 23 and 39, Fig. 1 of the Yamamoto reference discloses a mask frame assembly for a color cathode ray tube, comprising first and second support members 3a,b spaced out a predetermined distance. Fig. 1 teaches the use of first and second resilient support members 3c,d installed between the first and second support members supporting the first and

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second support members with each of the first and second resilient support members 3c,d comprising supports fixed to the first and second support members and a connection portion connecting the supports. A mask 2 is installed at the first and second support members 3a,b such that tension is applied thereto. The mask 2 has a plurality of electron beam through holes. The mask frame assembly further includes a compensating unit 18i connected between the first and second support members 3a,b. Yamamoto does is silent in regards to what material the compensating unit is formed of.

However, Heyman teaches the compensating unit 44 being formed of a material having a lower thermal expansion coefficient than that of the first and second resilient support members so to relieve stress in the compliant sections and intermediary members while also reducing tension in the mask during high temperature processing (col. 3, line 34 - col. 4, line 1). Accordingly, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used a compensating unit 44 formed of a material having a lower thermal expansion coefficient than that of the first and second resilient support members so to relieve stress in the compliant sections and intermediary members while also reducing tension in the mask during high temperature processing.

The recitation "so that the tension of the mask is transferred to the compensating unit during the annealing of the frame and the mask and then the tension is re-transferred from the compensating means unit to the mask after cooling, thereby maintaining an initial tension of the mask" has not been given patentable weight because is considered an intended used recitation. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

Regarding claim 25, the Heyman reference teaches that the thermal expansion coefficient of the mask is greater than that of the compensating unit and is equal to or greater than that of the first and second resilient support members (col. 3, line 29 – col. 4, line 4).

The combination in the rejection of claim 23 applies.

Claims 3, 16, 17, 24, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (JP 2000-003682) in view of Heyman et al. (US 6,246,164) as applied to claims 1, 13, and 23 above, and further in view of Ichigaya et al. (US 4,798,992).

Regarding claims 3, 16, 17, 24, and 36-38 the use of dampening devices to reduce vibrations is well known in the art as evidenced by Ichigaya (col. 8, lines 40-69).

It is noted that the specific form of the vibration reduction unit comprising at least one via-hole formed at each bar and a corresponding vibration preventing member shakably installed in the via-hole does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select any type (spring, damping wire, etc.) of vibration reduction unit for preventing the compensating unit from vibrating.

Furthermore, the specification of the present application, page 16, lines 7-9 teaches that anything having a structure capable of preventing the compensating unit from vibrating can be used.

Rejections above apply.

Claims 12, 22, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (JP 2000-003682) in view of Heyman et al. (US 6,246,164) as applied to claims 1, 13, and 23 above, and further in view of Kim et al. (US 6,437,496).

Regarding claims 12, 22, and 26, Yamamoto does not specifically teach mask using dummy bridges. However, Kim teaches that if the vertical pitch of the tie bars is too large, that is, if the vertical pitch of the tie bars is twice or more the horizontal pitch thereof, a reflection image of the tie bars is shown on the screen, which is unpleasant to viewers. To avoid this problem, U.S. Pat. No. 4,926,089 discloses a tensioned mask that includes a plurality of strips separated by slits having a predetermined pitch, and tie bars (real bridges) which interconnect the adjacent strips. Also, dummy bridges, which extend partially between but not interconnecting adjacent strips, are disposed between the adjacent tie bars to separate each slit into sub-slits having a predetermined interval (col. 1, lines 29-45).

Accordingly, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used a mask as taught by Kim so as to prevent a reflection image of the tie bars from appearing on the screen.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Gorog (US 6,225,736) and Reed et al. (US 6,274,975).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Anthony Perry* whose telephone number is (703) 305-1799. The examiner can normally be reached between the hours of 9:00AM to 5:30PM Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (703) 305-4794. The fax phone number for this Group is (703) 308-7382.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [Anthony.perry@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Anthony Perry
Patent Examiner
Art Unit 2879
March 7, 2003



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